REMARKS

Applicants respectfully request reconsideration of the present application in view of the reasons that follow.

No claims have been amended. Claims 15-28 remain pending in this application.

Rejections under 35 U.S.C. § 103

Claims 15, 27 and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over EP 1,174,600 A2 to Kobayashi et al. ("Kobayashi") in view of U.S. Patent No. 6,574,956 to Moraal et al. ("Moraal"). Claims 16, 17, 20-24 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kobayashi in view of Moraal, and further in view of U.S. Patent No. 5,974,791 to Hirota ("Hirota"). Claims 18-19 and 25 stand rejected under § 103(a) as being unpatentable over Kobayashi in view of Moraal and Hirota, and further in view of certain legal precedent. Applicants respectfully traverse these rejections for at least the following reasons.

The device of independent claim 15 recites:

> A purification device for an exhaust gas of a diesel engine, the diesel engine comprising a catalyst which traps nitrogen oxides in the exhaust gas but decreases a nitrogen oxides trapping performance when poisoned by sulfur oxides in the exhaust gas, and a filter which traps particulate matter in the exhaust gas, the device comprising:
>
> a programmable controller programmed to:
>
> determine if an elimination of the sulfur oxides poisoning the catalyst is required;
>
> perform a process of eliminating the sulfur oxides poisoning the catalyst, when elimination of the sulfur oxides poisoning the catalyst has been determined to be required;
>
> determine if a regeneration of the filter is required while performing the process of eliminating the sulfur oxides;
>
> *perform the regeneration of the filter while interrupting the process of eliminating the sulfur oxides, when the regeneration of the filter has been determined to be required;*
>
> *determine during the regeneration of the filter if a residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual particulate matter in the filter burns; and*

stop the regeneration of the filter and resume the process of eliminating the sulfur oxides poisoning the catalyst, when the residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual particulate matter in the filter burns.

Neither Kobayashi, nor the remaining references applied in the rejection of the claims, suggest or disclose at least the above italicized features in the context of claim 15. All of the rejections are based on a factually incorrect interpretation of Kobayashi as explained below.

In contrast to claim 15, Kobayashi does not disclose interrupting a process of eliminating sulfur oxides in the catalyst when the regeneration of the particulate filter has been determined to be required during the process of eliminating the sulfur oxides. According to the Kobayashi technique, when it is determined that a process of eliminating sulfur oxides should be performed, it is first determined whether or not the amount of the trapped particulate matter in the particulate filter is greater than a predetermined amount. In the case that the trapped particulate matter is greater than the predetermined amount, the Kobayashi system first performs a regeneration of the particulate filter and then performs the elimination of sulfur oxides after the regeneration of the particulate filter is completed. Thus, Kobayashi merely discloses performing a process of eliminating sulfur oxides from the catalyst after the regeneration of the particulate filter is completed. Kobayashi does not disclose interrupting the process of eliminating sulfur oxides from the catalyst when the particulate filter has been determined to require the regeneration and performing the regeneration with the process of eliminating sulfur oxides interrupted.

It is clear from the flow chart in FIG. 4 of Kobayashi that Kobayashi does not disclose interrupting the process of eliminating sulfur oxides from the catalyst when the particulate filter has been determined to require the regeneration, but only discloses first performing a regeneration of the particulate filter and then performing the elimination of sulfur oxides after the regeneration of the particulate filter is completed. In step S401 of FIG. 4, it is determined whether a process to recover the catalyst from S poisoning is required. If S poisoning recovery is not required ("NO") the routine ends, and if S poisoning recovery is required

("YES"), the procedure moves on to steps S402, S403, S404 and S405 in sequence. In step S405, it is determined whether the instantaneous target temperature Ti of the filter has become equal to the final target temperature Tf of the filter. If not ("NO"), the procedure moves to step 406 and then branches back to step 402. Only when the particulate matter has been completely burned off as determined in step S405 (See col. 21, paragraph [0116]), does flow continue to step 407 where S poisoning recovery is performed. After S poisoning recovery is performed in step 407 the routine ends. Significantly, once poisoning recovery begins in step 407, the flow chart of FIG. 4 shows that there is no interruption to determine if the filter needs to be regenerated. Thus, Kobayashi does not disclose interrupting the process of eliminating sulfur oxides from the catalyst when the particulate filter has been determined to require the regeneration.

Moreover, Kobayashi does not disclose that the control routine shown in FIG. 4 of Kobayashi et al. is a process which is repeatedly performed at regular intervals. Thus, there can be no overlap in consecutive performances of the control routine of FIG. 4 according to Kobayashi, and Kobayashi can not be properly interpreted as disclosing an "interruption" in S poisoning recovery to perform filter regeneration. With respect to the control routine of FIG. 4, Kobayashi states that the control routine is executed according to a control program stored in the ROM of the ECU 9, and that the control program is retrieved as needed by the CPU of the ECU 9 (cf. paragraph [0092]). It should be understood that the routine is performed occasionally and that the flowchart of FIG. 4 represents the entire process of filter regeneration and sulfur oxides elimination, not an instantaneous process repeatedly performed at regular intervals.

This interpretation of the control routine of FIG. 4 as not being repeatedly performed at regular intervals is logically justified by the fact that it includes a Do-Loop consisting of steps S402-S406. As long as the determination in step S405 is negative, this loop is performed eternally. Logically, any routine repeatedly performed at regular intervals must not include a Do-Loop, because there is no guarantee that the routine will exit from the Do-Loop and reach the END before the next execution of the routine starts.

The FIG. 4 control process is not a process that is repeatedly performed at regular intervals, but represents the entire process of filter regeneration and sulfur oxides elimination. In other words, the routine does not reach "END" unless the processing in the last step S407, i.e., sulfur oxides elimination, is completed. Again, Kobayashi does not disclose interrupting the process of eliminating sulfur oxides from the catalyst when the particulate filter has been determined to require the regeneration, but discloses performing the entire process of removing sulfur oxides only after filter regeneration.

Moreover, claim 15 further recites that the controller is programmed to "determine during the regeneration of the filter if a residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual particulate matter in the filter burns; and stop the regeneration of the filter and resume the process of eliminating the sulfur oxides poisoning the catalyst, when the residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual particulate matter in the filter burns." Kobayshi also fails to disclose these features of claim 15, as apparently recognized in the Office Action. The Office Action relies on Moraal for disclosing details of interrupting a regeneration cycle of a particulate filter if the filter exceeds a particular temperature range. Moraal, however, as noted in the Amendment filed on September 28, 2006, fails to cure the deficiencies of Kobayashi.

First, as noted in the Amendment filed on September 28, 2006, Moraal, like Kobayashi, does not suggest interrupting a process of eliminating sulfur oxides in a catalyst when the regeneration of the particulate filter has been determined to be required during the process of eliminating the sulfur oxides. In fact, Moraal does not disclose a NOx trapping catalyst at all, and thus does not disclose elimination of sulfur oxides poisoning from such a NOx trapping catalyst.

Second, as noted in the Amendment filed on September 28, 2006, while Moraal discloses interrupting the regeneration of a diesel particulate filter (DPF), Moraal does not suggest the feature of "determine during the regeneration of the filter if a residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual

particulate matter in the filter burns; and stop the regeneration of the filter and resume the process of eliminating the sulfur oxides poisoning the catalyst, when the residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual particulate matter in the filter burns", as in claim 15. Moraal merely discloses a twofold method for interrupting regeneration of the DPF when a critical threshold temperature is exceeded (col. 1, lines 31-34, 61-66). Moraal does not disclose interrupting its DPF regeneration based on the residual particulate matter in its DPF being determined to be below a particular level, nor does Moraal contemplate interrupting its DPF regeneration in the context of a process of eliminating sulfur oxides poisoning a catalyst.

In sum, even if Kobayashi were modified according to the teachings of Moraal, the combination would still not have a number of features of claim 15.

Hirota was cited for allegedly disclosing using a lean exhaust gas composition to purge particulate matter from a diesel particulate filter, but fails to cure the deficiencies of Kobayashi and Moraal.

Independent claims 27 and 28 include language corresponding to that discussed above with respect to claim 15, and thus are allowable for analogous reasons. Dependent claims 16-26 ultimately depend from claim 15, and are patentable for at least the same reasons.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated,

otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date March 29, 2007 By _____

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